Web FSA 2.0 Requirements Specifications

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(May 3, 2000)

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1. Introduction

1.1 Purpose

This document specifies the requirements for Flight Schedule Analyzer's (FSA) web interface for compliance and performance monitoring. The intended audience for this document is FAA CDM management, ATCSCC, and Metron FSA developers.

1.2 Scope

The FSA web interface will provide real-time compliance and performance monitoring during ground delay initiatives. However, the web interface will not contain the full FSA functionality. It is intended to provide traffic management specialists with an easy to use tool to determine:

- why a program is not delivering the requested number of arrivals
- which airlines, flights, or centers are contributing to the problem

The capabilities provided will allow specialists to identify and correct non-compliance problems at the time they are happening. Additionally, on-going monitoring and corrections should improve future performance.

1.3 Definitions, acronyms and abbreviations

The FSA web interface as described above will henceforth be referred to as "Web FSA" in order to differentiate this version from the full scale version of FSA. Other terms used throughout this document include

AAR – Airport Acceptance Rate

ADL – Aggregate demand list

Centers – FAA air traffic management centers.

ETA – The current estimated time of arrival.

ETE – The estimated time en-route.

FAA – Federal Aviation Administration.

FSA Real Time Data Server – An FSA process which will import FSM historical file data into the FSA database as updates are being received.

FSM – Flight Schedule Monitor.

FSM Historical Files – Data files generated by the FSM controller which contain aggregated ADL data for a 24 hour period.

GDP – Ground Delay Program.

Model Time – the time-stamp of the ADL that was used to model and generate the control times for the initial program.

OCTA – The original controlled time of arrival assigned to a flight.

OCTD – The original controlled time of departure assigned to a flight.

Pop-Up Time – The pop-up time is defined to be the ADL time of the first flight record that appears in the FSM historical file for a particular flight.

Reflect Time – The time stamp of the first ADL to contain the control times issued by FSM.

Slot ID – The slot identification that corresponds to a flight's assigned arrival time. The slot ID is equal to the flight's assigned slot time plus a single letter postfix which uniquely identifies a slot when multiple flights have the same slot time.

Slot Time – The arrival time (assigned by FSM), that is contained within the Slot ID field in the ADL.

1.4 References

The requirements described in this document are based on the correspondences listed below.

1. The 04/11/2000 requirements meeting attended by FAA quality assurance personnel and Metron. Meeting minutes are available in the FSA project archive. The document title is "RequirementsMeetingForWebFSA041100.doc"

2. Email from Tim Grovac dated 4/19/2000 at 8:12. The email content is saved in the FSA project archives as "TimGrovacEmail041900.doc"

2. Product Description and Requirements

2.1 Functional Requirements

Web FSA will provide four types of flight lists through a web interface.

Req# 1. **Performance:** A list of all flights that are not arriving in the hour dictated by their control time. Flights with no Slot ID will also be listed.

Req# 2. **Compliance:** A list of flights that are not CTD compliant.

Req# 3. **Cancels that Flew:** A list of all flights that were canceled and operated without being reinstated before departure.

Req# 4. **Pop-ups:** A list of all flights which first appeared in the aggregate demand lists after the program model time and are expected to arrive within the program start and end times.

The performance view will enable specialists to determine why a program is not delivering the requested number of arrivals per hour. Lists 2, 3, and 4 will identify which airlines, flights, or centers are impacting performance.

Each flight list will be available on demand and will reflect the most current data available *.

The flight lists displayed in Web FSA will automatically be updated when a new ADL is received without requiring the user to click on an update button.

A predefined format has been established for each flight list. The formats are illustrated on pages 6-9 of this document. Each format description includes, an example flight list, a description of the inclusion criteria (i.e. which flights should appear in the list), the data fields to display, the sort order, and any additional information which should appear in the display.

Functionality to change the display format has been limited to ensure that information is displayed in a manner that is most beneficial to identifying compliance/performance problems and for ease of use. No functionality will be available to add additional data fields to the flight lists and users will not be able to change the sort order for lists 2, 3, and 4.

Users should have the capability to “cut and paste” all or a portion of the flight lists into the ATCSCC logs for future reference. The capability to do so will help document evidence of operational issues that are impacting performance.

Note: The following examples do not display actual data. See Appendix A for flight lists based on an actual Chicago program.

*Please see the sections titled “Interfaces” and “Constraints”

2.1.1 Format and Content for Performance Flight Lists

	ACID	Slot Time	ETA	Comments	(ETA-Slot Time)	Exempt Status
1900	FAA1	-	1905	Pop-up	- -	
AAR/DEMAND	FAA2	-	1901		- -	
45/30	FAA4	1845	1905		20	Exempt
	FAA5	1850	1920	Late Departure	30	
	FAA6	2010	1950	Departed Early	-20	
	FAA7	2300	1910	CNX-Flew	230	

Figure 1: Example of a Performance Flight List

Content: For each hour show the flights arriving in that hour that either did not have a slot time assigned or had a slot time in an earlier or later hour. This shows the extra demand that has materialized for each hour that was not allocated by the program. The interface will include a toggle button that allows the users to show all flights if desired. Do not list cancelled flights.

For each hour show the AAR and Arrival Demand. Show one hour prior to the current hour through the last hour of the program.

Fields Displayed: ACID, Slot Time, ETA, Comments, (ETA – Slot Time), and exemption status.

The comments field will state any operational issues with the flight that may have contributed to the flight arriving in an hour other than its control hour. The comments field will contain one of the following values:

1. **CNX That Flew** *(Cancelled flight which operated and was not reinstated before departing)*

2. **Non Program Flight** *(Flights which were not originally in the program but are now arriving during the program hours due to a delay or early arrival. The following rules will be used to identify these flights: the flight does not have a slot ID; it has a SGTA; the IGTA does not fall within the program parameters however the current ETA does fall within the program time. Determination of whether a flight is a non-program flight will be based on the current program parameters when the flight list is generated.)*

3. **Pop-up** (*No SGTD/SGTA and pop_up time > program model time*)

4. **Early Departure** *(ARTD – CTD < -5)*

5. **Late Departure** (*ARTD – CTD > 15*)

6. **Time-out Delay** *(The time out delay flag for a flight is equal to Y)*

7. **Subbed With Window** (*CTA <> Slot Time due to airline subbing which took advantage of the 20 minute window)*

8. **ETE Fluctuation** *(Changes to ETE could be due to airborne holding, Volpe modeling, or other reasons. This comment only indicates that the current ETE differs by more than X% from the ETE at departure. It does not indicate why the ETE has changed. The calculation to determine if a flight's ETE has changed significantly will be as follows: If (ETA – ETD) > (1 + X%)(CTA-CTD) or (ETA – ETD)< (1- X%)(CTA-CTD), where X% is the percentage of fluctuation " allowable", then the ETE has changed significantly. The CTA/CTD used in this calculation should be the current CTA/CTD. Specialists will not be able to change the X% parameter from the web interface; however , the code design should allow this parameter to be changed at the request of the ATCSCC. The initial value for this parameter may be specified by the ATCSCC personnel or determined via analysis by Metron staff.* ***This comment type only applies to flights that have departed.***

9. Null (*None of the above issues apply*.)

Notes: If more than one type of comment applies to a flight only the comment with the highest priority will be shown in the flight list. The comments are listed in order of priority. The descriptive text in italics will not be displayed.

Sort Order: Lists flights by the hour based on ETA. For example, all flights that have an ETA of 1900-1959 should be listed for the 1900 hour, all flights with an ETA of 2000-2059 should be listed for the 2000 hour, etc. Within each hour, sort by Slot Time. Flights with no Slot Time will appear first within each hour..

Enhancements: In additions to the ARR and Demand, we could also display the number of cancellations, the number of flights which did not show up, and a count of the extra demand for each hour (this is the sum of the flights listed). The left hand column would look like this.

Allow the user to sort the information in the GDP performance view alphabetically by the "Comments" field **within each hour**

1600
AAR/DEMAND 64\72
Extra Demand 17
Cancellations 1
Missing Flights 8

The above example is for the 1600 hour of the ORD-19-00 program. The requested AAR was 64. Seventy-two flights are expected to arrive in the 1900 hour. Eight flights that have slot times in the 1600 hour will not be arriving in this hour (they show up in an earlier or later hour). Seventeen flights which are supposed to be arriving in other hours are arriving in the 1600 hour. There is one open slot in the 1600 hour due to a cancelled flight. Notice that (64 – 8 – 1 + 17)=72 the demand expected. The numbers will add up in most cases.

Programming Notes: In the performance flight list, Slot Time is the 6 numeric characters in the Slot ID field. Slot time, ETA, and Exempt Status should be taken from the most current flight record.

2.1.2 Format and Content for Compliance Flight Lists

2.1.2.1 CTD COMPLIANCE LIST

Departure Hour	ACID	ARTD	CTD	(ARTD-CTD)	Dairport	Dcenter
1900	FAA1	1930	1900	30	EWR	ZNY
	FAA2	1925	1955	-30	JFK	ZNY
	FAA3	1924	2000	-36	JFK	ZNY
	Etc.					

Figure 2: Example of a CTD Compliance Flight List

Content: List all controlled flights that were not CTD compliant. A flight will be considered non-compliant if it departs more than 5 minutes before or 15 minutes after its controlled time of departure (CTD). The compliance parameters (-5, 15), cannot be changed by the users. However, the code design should allow for these parameters to be changed upon request by the ATCSCC. Exclude all "Cancels that Flew" from this list.

Only departed flights will be included in the list. Timeout delayed flights on the ground which are non-compliant will not appear in the list until they have departed and their ARTD is reflected in the ADL.

Fields Displayed: ACID, ARTD, CTD, ARTD-CTD, Departure Airport, Departure Center.

Sort Order: Sort by ARTD in descending order so that the latest flights appear at the top of the list.

Enhancements: Add a process to screen for bad data and exclude any flights whose flight records were flagged as having a data anomaly. Add a parameter which allows users to exclude international flights.

Programming Notes:: The CTD displayed in this flight list should be the CTD at departure. All other data fields can be taken from the most current record.

2.1.3 Format and Content for "Cancels That Flew" Flight List

Cancels That Flew

Departure Hour	ACID	ARTD	CTD	ARTD-CTD	CNX-Type	DAirport	DCenter
1900	FAA1	1920	2201	-201	SI	EWR	ZNY
	FAA2	1905	1730	95	TO	EWR	ZNY

Figure 3: Example of a "Cancels That Flew" Flight List

Content: Display all controlled flights that were cancelled and operated **without being reinstated.** Diversion cancellations should not be included in this list.

Fields Displayed: ACID, ARTD, CTD, ARTD-CTD, Cancellation Type, Departure Airport, Departure Center. If a flight has multiple cancellation types, the order of precedence will be -

1. SI
2. FX
3. TO
4. RZ
5. ID
6. RS

Sort Order: Sort by ARTD in descending order so that the latest flights appear at the top of the list.

Enhancements: Add a process to screen for bad data and exclude any flights whose flight records were flagged as having a data anomaly.

Programming Notes: A flight was not reinstated before it was operated if the flight record preceding the first record with an ARTD has a cancellation flag that was set to Y. Currently the cancellation flag is removed when the flight departs; therefore, you cannot judge the flight's cancellation status by looking at the first record with an ARTD or the current record.

The CTD displayed in this flight list should be the CTD at departure.

If this list is generated after the program is cancelled, do not include "cancels that flew " whose ARTD is later than the program cancellation time. The code should check the GDP parameters table to determine if the GDP has been cancelled *(Confirm this with the ATCSCC).*

2.1.4 Format and Content for Pop-Up Flight Lists

POP-UPS

Hour	ACID	POPUP Time	ETA	CTD	CTA	Slot ID	DAirport	DCenter
2300	FAA1	19 2349	E20015	-	-	-	CYYZ	CZY
2200	FAA2	19 2254	E20011	192322	200127	200127	DEN	ZDV
	FAA3	19 2254	E19233	-	-	-	ROC	ZOB
2100	FAA5	19 2139	E20022	200010	200110	200110	ALO	ZAU
	FAA6	19 2124	E20012	-	-	-	CYYZ	CZY

Content: List all pop-up flights whose ETA falls within the program hours (based on the program parameters at the time the flight list is generated.) For the purposes of this flight list, a pop_up will be defined to be any flight which does not have a SGTD/SGTA and whose pop_up time is greater than the program model time (actual not proposed). The pop-up time is defined to be the ADL time of the first flight record that appears in the FSM historical file for a particular flight.

Fields: ACID, ASLOT, CTA, pop_up time, departure center, departure airport, ETA, CTD.

Sort Order: Sort by pop-up time in descending order.

Enhancements: Add a process to screen for bad data and exclude any flights whose flight records were flagged as having a data anomaly. Add a parameter which allows users to exclude international flights.

Programming Notes: CTD/CTA in this flight list should be taken from the most current flight record.

2.2 User Characteristics

Web FSA's intended users are the ATCSCC traffic management specialists who are executing and managing ground delay programs. No provisions are being made at the current time to make Web FSA available to airline users or other CDM participants.

2.3 Interfaces

Per conversations with ATCSCC staff, Web FSA should have a very simple interface that requires little to no training. Web FSA will be accessed from the ATCSCC web site. ATCSCC/Kenrob will provide a link from a page on the ATCSCC web site. Upon selecting the link the user will be prompted to select the airport they wish to monitor. Once an airport has been selected the performance flight list will be shown by default. Links at the top of the page will allow the user to view the other flight lists for the airport selected.

Web FSA should be Netscape compatible (HPUX and Windows NT versions of Netscape).

Web FSA will depend on the FSA real time data server to provide the data for the previously described flight lists. The FSA real time data server will monitor the FSM reports directory on the CDM 1 server. When the first coversheet appears for a GDP, the data server will retrieve and process the FSM historical file for the affected airport(s). Processed information will be stored in the FSA database. Updates to the historical file, available as "delta" files, will be processed and added to the FSA database as each new ADL file is received. Web FSA will then query the FSA database to derive the desired flight lists.

2.4 Availability, Operations, and Maintenance

Flight lists reflecting the most current ADL data will need to be available from the reflect time of the initial program until the program is cancelled. After a program has been cancelled, flight lists will be static and reflect the state of the program at the cancellation time.

The FSA real-time data server will need to be running 24-7 to monitor for programs and process data when a program is in place. The software interface for the server is local to the machine running the server processes. The current design for the server does not accommodate remote operation.

At this time we do not believe there will be any client side installation requirements (i.e., no plug-ins); therefore, we do not foresee any maintenance requirements on the clients. On the sever-side an FSA web server will need to be maintained if the ATCSCC's web server is not used.

With regard to database maintenance, FSA real-time data tables will be deleted at the end of the day by an automated process; however, the equivalent data will still be accessible in FSA's historical database. The final flight lists will be archived.

Enhancements: Allow remote operation of the FSA real time data server from an interface running on a client NT.

2.5 Communications

Web FSA will use the HTTP protocol to access HTML files. The FSM Data server will use the FTP protocol to transfer files from the servers hosting the FSM controllers to the FSA data server. No connections to the FSM controller are required. Network connectivity is required between the clients and the FSA data server.

2.6 Site Adaptation – User Preferences

There are currently, no plans to allow the users of Web FSA to set preferences or customize the web interface. The current requirements as stated do not let users specify a default airport or flight list to be displayed when the user clicks on the Web FSA link.

The FSA real-time data server configuration will allow up to three FSM servers to be specified for data collection. Additionally, the precedence of the servers may be specified.

2.7 Constraints

Because FSA's data source will be FSM historical files, the quality and completeness of the flight information displayed by Web FSA will be highly dependent on the FSM controllers to provide

complete historical data. The FSA data server will, by default, first look on the CDM5 server for the historical data file. If the file is found (i.e. the airport is being collected) FSA will use the historical and delta files on CDM5 as its data source. If the airport is not being collected on CDM5, FSA will look for the files on CDM1, then CDM2. In the event, that a server goes down FSA will attempt to retrieve the delta files from another server. The FSA data server will provide the most complete history available; however, data may be incomplete under the following circumstances: airport collection did not begin at 0800 zulu for the historical file retrieved or the historical file is missing updates due to automation problems.

Enhancements: Add code to verify that the most complete historical file of the files available has been retrieved (in lieu of the first found). This code would check to see which file has the most "coverage" based on the START_UPDATE times in the files. At a minimum the historical file updates should start before the program model time.

2.8 Assumptions and dependencies

These requirements assume the FSA real-time data server will run on an NT platform and that the Web FSA clients will have access to the NT through the ATCSCC's local area network. We are also assuming that HTML files for Web FSA will be housed on the ATCSCC's operational web server or a web server maintained on the FSA server. Any client side scripting should be done in a scripting language that supports both Netscape and Internet Explorer.

2.9 Performance requirements

Flight list should be retrieved and displayed within 3 seconds of the actual request. Up to 30 NT clients will be supported. The FSA real-time data server must be able to process up to 10 airports simultaneously when multiple GDPs are underway.

2.10 Security

The data maintained in the FSA database will be password protected and will not be directly accessible by anyone other than technical support staff. End users will only be able to access the data through an FSA interface. Anyone outside of the ATCSCC firewall will not be able to access the web interface.

2.11 Portability

Any client side scripting will be portable to both Unix and NT versions of Netscape. The server side FSA data processing code will not be portable to a Unix platform.

2.12 Apportioning of Requirements

The first version of web FSA will contain all the functionality described in this document except those items listed as enhancements. Metron plans on delivering enhancements in a second release of Web FSA. If the ATCSCC feels that any of the items listed as enhancement should be included in the first release Desiree Asche should be notified by May 15, 2000. The release date for Version 1 will be adjusted accordingly.

APPENDIX A

ORD Performance Flight List

Flight list generated at 1646z on 4/19/00

Program Hour	ACID	Slot Time	ETA	(ETA-SlotTime)	Comments	Exemption Status
1500	AAL1118	-	A191531		Non Program Flight	
AAR/Demand 64\55	AAL816	-	A191514		Non Program Flight	
Cancellations 1	BLR862	-	A191508		Non Program Flight	
	AWI542	-	A191514		Non Program Flight	
	USA364	-	A191513		Non Program Flight	
	UAL345	191600	A191558	-2		Exempt
1600	N850SM	-	C191653		Pop-up	
AAR/Demand 64\72	UAL1785	191531	A191610	39	Time Out Delayed	Exempt
Cancellations 1	UAL1733	191553	A191601	8	Time Out Delayed	Exempt
	COA1104	191555	A191602	7	Time Out Delayed	Exempt
	UAL101	191557	A191603	6		Exempt
	EGF6	191558	A191608	10	Time Out Delayed	Exempt
	GLA6656	191559	A191606	7	Time Out Delayed	Exempt
	SAS945	191701	E191652	-9		Exempt
	UAL1515	191703	E191648	-15		Exempt
	EGF130	191704	A191645	-19	Late Departure	Exempt
	UAL367	191705	E191654	-11		Exempt
	AWI883	191707	E191651	-16		Exempt
	MXA800	191708	E191656	-12	Time Out Delayed	Exempt
	AAL87	191709	E191653	-16		Exempt
	UAL242	191719	E191646	-33	Early Departure	Exempt
	AWI625	191739	A191612	-87	Early Departure	
	EGF720	191807	E191649	-78	Early Departure	
1700	N3026H	-	C191738		Pop-up	
AAR/Demand 64\52	UAL748	191554	L191709	75	Time Out Delayed	Exempt
Cancellations 1	EGF258	191631	C191726	55	Time Out Delayed	Exempt
	EGF751	191636	E191711	35	Late Departure	Exempt
	GLA6682	191637	C191737	60	Late Departure	Exempt
	BLR803	191652	E191702	10	Time Out Delayed	Exempt
	AWE1	191657	E191721	24	ETE Increase > 25%	Exempt
	N850SM	191658	E191700	2	Late Departure	Exempt
	UAL514	191659	E191725	26	Time Out Delayed	Exempt
	EGF60	191801	E191712	-49	Early Departure	
	UAL1409	191802	E191719	-43	Early Departure	
	AAL1512	191844	E191749	-55	Time Out Delayed	Exempt
	AAL321	191847	E191727	-80	Early Departure	
	COA1171	191907	E191709	-118	Early Departure	

1800	N994CT	-	C191811		Pop-up	
AAR/Demand 64\69	AWI35	-	C191849		Pop-up	
Cancellations 5	UAL1138	191716	E191806	50	Late Departure	Exempt
	UAL647	191730	E191810	40	Late Departure	Exempt
	AAL1250	191734	E191837	63	Late Departure	Exempt
	AAL460	191736	E191812	36	Late Departure	Exempt
	UAL330	191743	E191802	19		Exempt
	AAL1068	191745	E191802	17		Exempt
	UAL1614	191747	E191809	22	Late Departure	Exempt
	UAL1948	191749	E191819	30	Early Departure	Exempt
	AAL498	191751	E191809	18		Exempt
	UAL929	191754	E191806	12	Time Out Delayed	Exempt
	UAL114	191756	E191830	34	Early Departure	Exempt
	UAL686	191757	C191816	19	Late Departure	
	UAL1039	191759	E191803	4	Time Out Delayed	
	AAL1311	191903	C191859	-4		Exempt
	AAL365	191905	E191854	-11		Exempt
	AAL604	191908	E191855	-13		Exempt
	UAL586	191912	C191822	-50	Time Out Delayed	
	UAL246	191915	C191832	-43	Late Departure	
	UAL1200	191921	C191820	-61	Time Out Delayed	
1900	RYN2356	-	E191954		Pop-up	
AAR/Demand 64\69	N23404	-	C191907		Pop-up	
Cancellations 1	N41BP	-	C191939		Pop-up	
	JUD530	-	C191941		Pop-up	
	EGF752	191614	C191924	190		Exempt
	AAL1724	191731	E191900	89	Late Departure	Exempt
	UAL652	191822	E191922	60	Late Departure	
	EGF2	191835	C191931	56		
	UAL432	191838	E191909	31	Time Out Delayed	Exempt
	AAL1524	191842	E191900	18		Exempt
	UAL772	191852	E191914	22		Exempt
	AAL1596	191853	E191943	50		Exempt
	CDN210	191856	E191904	8	Early Departure	Exempt
	TWA106	191859	C191922	23	ETE Increase > 25%	
	UAL1500	192003	E191903	-60	Early Departure	
	AAL1380	192004	C191938	-26	Late Departure	
	AAL845	192049	C191927	-82		
	AAL802	192208	C191955	-133		
2000	N897MC	-	C192002		Pop-up	
AAR/Demand 64\70	N897MC	-	C192002		Pop-up	
Cancellations 2	N899SD	-	C192043		Pop-up	
	AAL89	-	E192057		Non Program Flight	
	CDN212	191848	E192031	103	Late Departure	Exempt
	UAL1760	191923	C192041	78	Late Departure	
	UAL1847	191932	C192046	74	Early Departure	Exempt
	AAL55	191938	E192039	61		Exempt

NWA134	191949	C192038	49	Late Departure
UAL276	192103	C192057	-6	
UAL108	192130	C192053	-37	
AAL1514	192213	C192034	-99	

ORD CTD Compliance Flight List

Flight list generated at 0159z on 4/20/00

Departure Hour	ACID	ARTD	CTD	(ARTD-CTD)	Origin	DCenter
2300	EGF354	19 2354	19 2318	36	TOL	ZOB
	N731DL	19 2354	20 0206	-132	PWK	ZAU
	NWA1226	19 2354	19 2235	79	DTW	ZOB
	EGF150	19 2350	19 2253	57	DAY	ZID
	UAL745	19 2350	20 0032	-42	FLL	ZMA
	AAL482	19 2349	19 2302	47	LAX	ZLA
	UAL438	19 2349	19 2237	72	MSY	ZHU
	BLR851	19 2348	19 2317	31	CHS	ZJX
	AAL1795	19 2347	19 2310	37	EWR	ZNY
	AWE7	19 2346	19 2300	46	PHX	ZAB
	BLR831	19 2346	20 0111	-85	SAV	ZJX
	AWI885	19 2345	19 2300	45	TRI	ZTL
	NWA1298	19 2345	19 2354	-9	MSP	ZMP
	DAL1608	19 2344	19 2324	20	ATL	ZTL
	AAL435	19 2343	19 2351	-8	CYUL	CZU
	AAL1383	19 2341	19 2313	28	BOS	ZBW
	NWA1453	19 2339	19 2322	17	DTW	ZOB
	AAL2260	19 2338	19 2346	-8	DFW	ZFW
	UAL8106	19 2338	19 2322	16	DEN	ZDV
	TWA225	19 2333	19 2242	51	STL	ZKC
	UAL679	19 2330	19 2241	49	LGA	ZNY
	UAL1867	19 2329	19 2304	25	PHL	ZNY
	UAL1066	19 2321	19 2230	51	STL	ZKC
	UAL1569	19 2318	20 0004	-46	BWI	ZDC
	GLA6698	19 2317	20 0022	-65	IWD	ZMP
	EWW336	19 2314	19 2249	25	DAY	ZID
	UAL8169	19 2312	19 2221	51	LAX	ZLA
	EGF296	19 2309	19 2242	27	IND	ZID
	UAL142	19 2304	19 2220	44	SFO	ZOA
	UAL1619	19 2302	19 2243	19	IAD	ZDC
	GLA6622	19 2300	19 2239	21	BRL	ZAU
2200	AAL1112	19 2259	19 2305	-6	MSP	ZMP
	AWI554	19 2255	19 2239	16	MSN	ZAU
	AAL24	19 2254	19 2234	20	DTW	ZOB
	EGF342	19 2251	19 2219	32	FWA	ZAU
	AAL1862	19 2250	19 2302	-12	AUS	ZHU
	AAL1437	19 2248	19 2309	-21	CYYZ	CZY

	UAL655	19 2245	19 2222	23	EWR	ZNY
	UAL1673	19 2244	19 2228	16	MCO	ZJX
	EGF98	19 2241	19 2253	-12	CVG	ZID
	BLR860	19 2240	19 2249	-9	FAR	ZMP
	UAL575	19 2235	19 2219	16	BDL	ZBW
	UAL275	19 2219	19 2244	-25	ATL	ZTL
	ACA1017	19 2218	19 2145	33	CYOW	CZU
	AAL1765	19 2217	19 2148	29	CYYZ	CZY
	EGF48	19 2213	19 2242	-29	TVC	ZMP
	USA1640	19 2212	19 2219	-7	PIT	ZOB
	GLA6684	19 2211	19 2026	105	DBQ	ZAU
	SWR7000	19 2210	19 2149	21	CYQX	CZQ
	EGF404	19 2209	19 2219	-10	HSV	ZME
	DAL1788	19 2204	19 2045	79	ATL	ZTL
	AAL1035	19 2203	19 2147	16	FLL	ZMA
	UAL385	19 2200	19 2123	37	TPA	ZMA
2100	AMT7105	19 2157	20 0111	-194	NGU	ZDC
	AWI627	19 2155	19 2104	51	MKE	ZAU
	AAL1364	19 2151	19 2157	-6	LGB	ZLA
	NWA496	19 2147	19 2054	53	DTW	ZOB
	UAL1046	19 2146	19 2050	56	CID	ZAU
	AAL1565	19 2144	19 2125	19	TJSJ	ZSU
	AAL2256	19 2144	19 2244	-60	DFW	ZFW
	EGF58	19 2144	19 2052	52	GRR	ZAU
	AAL1560	19 2138	19 2039	59	LAX	ZLA
	UAL1837	19 2134	19 2104	30	MEM	ZME
	UAL104	19 2133	19 2021	72	LAX	ZLA
	UAL1688	19 2125	19 2058	27	DSM	ZMP
	AAL337	19 2122	19 2207	-45	LGA	ZNY
	CDN216	19 2120	19 2126	-6	CYVR	CZV
	AAL37	19 2100	19 2112	-12	LSZH	ZEU
	TWA58	19 2057	19 2015	42	STL	ZKC
	UAL1537	19 2034	19 2015	19	CMH	ZID
	UAL712	19 2031	19 2039	-8	MSP	ZMP
	UAL623	19 2026	19 2211	-105	DCA	ZDC
	UAL252	19 2017	19 2023	-6	DEN	ZDV
	AAL1461	19 2014	19 1953	21	TJSJ	ZSU
	NWA134	19 2013	19 1945	28	MSP	ZMP
	ACA817	19 2009	19 1948	21	CYYZ	CZY
	UAL1496	19 2003	19 1936	27	PHX	ZAB
1900	EGF288	19 1957	19 2015	-18	LSE	ZMP
	AWI877	19 1953	19 1827	86	FWA	ZAU
	EGF18	19 1950	19 1959	-9	DSM	ZMP
	EGF41	19 1950	19 2024	-34	IND	ZID
	EGF378	19 1946	19 2037	-51	PIA	ZAU
	UAL622	19 1945	19 1923	22	SLC	ZLC
	AAL1836	19 1942	19 1948	-6	TUS	ZAB
	AAL1046	19 1940	19 1836	64	IND	ZID
	AAL2244	19 1940	19 1946	-6	DFW	ZFW

	DAL2132	19 1939	19 2032	-53	CVG	ZID
	EGF253	19 1936	19 1905	31	TVC	ZMP
	AAL503	19 1934	19 2014	-40	DTW	ZOB
	JUD530	19 1933	19 1944	-11	YIP	ZOB
	AWI855	19 1931	19 1827	64	SBN	ZAU
	AWI805	19 1929	19 1829	60	GRB	ZMP
	EGF212	19 1929	19 1905	24	IND	ZID
	GLA6682	19 1929	19 1822	67	DBQ	ZAU
	MEX810	19 1929	19 2010	-41	CVG	ZID
	UAL1463	19 1926	19 1828	58	DTW	ZOB
	N899SD	19 1925	19 2045	-80	PIA	ZAU
	UAL1590	19 1924	19 1838	46	OAK	ZOA
	UAL1124	19 1918	19 1835	43	MSP	ZMP
	UAL1747	19 1917	19 1840	37	TJSJ	ZSU
	EGF193	19 1916	19 1824	52	GRB	ZMP
	GLA6792	19 1915	19 1831	44	LAF	ZAU
	EGF231	19 1912	19 1852	20	MKE	ZAU
	NWA302	19 1912	19 1919	-7	MSP	ZMP
	COA667	19 1911	19 1851	20	CLE	ZOB
	BLR838	19 1910	19 1842	28	FAR	ZMP
	GLA6634	19 1908	19 1833	35	IMT	ZMP
	UAL1760	19 1905	19 1838	27	CID	ZAU
	NWA128	19 1903	19 1826	37	MSP	ZMP
1800	UAL621	19 1859	19 1956	-57	DCA	ZDC
	UAL1847	19 1858	19 1942	-44	CYYZ	CZY
	DAL1718	19 1857	19 1838	19	CVG	ZID
	AAL844	19 1856	19 1905	-9	MSP	ZMP
	UAL1558	19 1856	19 1836	20	OMA	ZMP
	UAL1138	19 1854	19 1833	21	IND	ZID
	AAL329	19 1850	19 1914	-24	LGA	ZNY
	UAL619	19 1850	19 1924	-34	DCA	ZDC
	AAL1742	19 1849	19 1925	-36	IAH	ZHU
	N5114	19 1849	19 2013	-84	PDK	ZTL
	UAL1169	19 1849	19 1915	-26	BOS	ZBW
	UAL686	19 1849	19 1828	21	IND	ZID
	AAL793	19 1847	19 1917	-30	HPN	ZNY
	EGF166	19 1847	19 1826	21	LSE	ZMP
	AAL1450	19 1844	19 1908	-24	SAT	ZHU
	AAL768	19 1843	19 1821	22	TUL	ZKC
	AWE3	19 1843	19 1853	-10	PHX	ZAB
	AAL1234	19 1841	19 1900	-19	ATL	ZTL
	UAL683	19 1840	19 1824	16	LGA	ZNY
	AAL1844	19 1838	19 1903	-25	SNA	ZLA
	MXA808	19 1837	19 1820	17	STL	ZKC
	UAL1678	19 1837	19 1902	-25	ICT	ZKC
	UAL453	19 1837	19 1950	-73	BDL	ZBW
	PAC506	19 1836	19 1850	-14	ANC	ZAN
	UAL1657	19 1829	19 1908	-39	BWI	ZDC
	AAL1347	19 1827	19 1833	-6	PHL	ZNY

	UAL528	19 1827	19 1905	-38	PDX	ZSE
	AAL1408	19 1826	19 1833	-7	SEA	ZSE
	UAL1198	19 1812	19 1818	-6	RIC	ZDC
	AAL1583	19 1805	19 1811	-6	RDU	ZDC
1700	AMT6018	19 1758	19 1610	108	MYNN	ZSA
	UAL617	19 1758	19 1807	-9	DCA	ZDC
	AAL1103	19 1745	19 1753	-8	BDL	ZBW
	NWA1867	19 1742	19 1822	-40	DTW	ZOB
	AAL1359	19 1738	19 1757	-19	TPA	ZMA
	AAL1380	19 1724	19 1700	24	PHX	ZAB
	UAL517	19 1724	19 1704	20	FLL	ZMA
	UAL1201	19 1723	19 1658	25	RSW	ZMA
	UAL246	19 1722	19 1645	37	DEN	ZDV
	UAL842	19 1717	19 1654	23	LAX	ZLA
	UAL687	19 1712	19 1647	25	LGA	ZNY
1600	USA1821	19 1657	19 1714	-17	PIT	ZOB
	UAL725	19 1651	19 1709	-18	IAD	ZDC
	UAL1409	19 1645	19 1728	-43	GRR	ZAU
	CDN212	19 1639	19 1508	91	CYVR	CZV
	EGF54	19 1637	19 1734	-57	XNA	ZME
	EGF188	19 1632	19 1616	16	IND	ZID
	AWI552	19 1630	19 1746	-76	MSN	ZAU
	EGF60	19 1630	19 1649	-19	PIA	ZAU
	UAL1629	19 1624	19 1554	30	PIT	ZOB
	UAL652	19 1621	19 1554	27	PHX	ZAB
	AAL1250	19 1612	19 1509	63	ELP	ZAB
	EGF751	19 1607	19 1527	40	SAW	ZMP
	UAL647	19 1606	19 1530	36	EWR	ZNY
	AAL1724	19 1602	19 1515	47	ABQ	ZAB
1500	EGF152	19 1558	19 1542	16	GRR	ZAU
	UAL1500	19 1553	19 1649	-56	SNA	ZLA
	UAL287	19 1547	19 1531	16	TYS	ZTL
	UAL615	19 1545	19 1551	-6	DCA	ZDC
	AWI625	19 1543	19 1721	-98	MKE	ZAU
	CDN210	19 1543	19 1553	-10	CYYC	CZE
	EGF170	19 1542	19 1520	22	PIT	ZOB
	UAL1707	19 1541	19 1503	38	CMH	ZID
	AAL321	19 1534	19 1655	-81	LGA	ZNY
	BLR855	19 1533	19 1542	-9	CAK	ZOB
	EGF720	19 1531	19 1650	-79	SAW	ZMP
	N850SM	19 1527	19 1508	19	CLT	ZTL
	EGF313	19 1526	19 1507	19	DAY	ZID
	UAL1401	19 1514	19 1524	-10	CLE	ZOB
	COA1171	19 1513	19 1714	-121	EWR	ZNY
	UAL578	19 1505	19 1511	-6	SLC	ZLC
	AAL528	19 1503	19 1516	-13	MSP	ZMP
1400	EGF326	19 1457	19 1440	17	FWA	ZAU
	UAL1635	19 1455	19 1514	-19	HPN	ZNY
	UAL1823	19 1452	19 1436	16	CYYZ	CZY

	DAL1190	19 1450	19 1430	20	ATL	ZTL
	EGF130	19 1450	19 1329	81	XNA	ZME
	AAL460	19 1448	19 1412	36	PHX	ZAB
	UAL242	19 1448	19 1454	-6	DEN	ZDV
	UAL1948	19 1446	19 1454	-8	LAS	ZLA
	AAL483	19 1443	19 1449	-6	DCA	ZDC
	UAL1138	19 1439	19 1410	29	PHX	ZAB
	AAL1369	19 1435	19 1500	-25	DTW	ZOB
	UAL114	19 1434	19 1457	-23	LAX	ZLA
	UAL8141	19 1434	19 1444	-10	IAD	ZDC
	USA1808	19 1433	19 1411	22	PHL	ZNY
	AAL317	19 1432	19 1452	-20	LGA	ZNY
	AAL585	19 1432	19 1447	-15	ROC	ZOB
	UAL645	19 1430	19 1512	-42	EWR	ZNY
	UAL689	19 1428	19 1438	-10	LGA	ZNY
	N28GP	19 1424	19 1454	-30	FTY	ZTL
	AAL1487	19 1419	19 1438	-19	ATL	ZTL
	EIN125	19 1416	19 1427	-11	EIDW	ZEU
	AAL1198	19 1413	19 1422	-9	CYYC	CZE
1300	UAL1614	19 1356	19 1340	16	CYVR	CZV
	AAL1118	19 1348	19 1355	-7	STL	ZKC
	AAL507	19 1345	19 1352	-7	PHL	ZNY
	COA1175	19 1330	19 1336	-6	EWR	ZNY
	AAL41	19 1321	19 1335	-14	LFPG	ZEU
900	DLH434	19 0957	19 1022	-25	EDDM	ZEU
	AZA626	19 0926	19 0949	-23	LIMC	ZEU
	AUA523	19 0919	19 0937	-18	LOWW	ZEU
800	DLH430	19 0824	19 0844	-20	EDDF	ZEU

ORD Cancels That Flew

Flight list generated at 0159z on 4/20/00

Departure Hour	ACID	ARTD	CTD	(ARTD–CTD)	Cancel Reason	Origin	Dcenter
1900	UAL681	191951	192006	-15	TO	LGA	ZNY
1800	AWI544	191839	192157	-198	SI	MLI	ZAU

ORD Pop-ups

Flight list generated at 0159z on 4/20/00

ACID	Popup Time	ETA	CTD	CTA	Slot ID	Origin	DCenter
ACA7031	19 2349	200153	-	-	-	CYYZ	CZY
UAL8106	19 2254	200111	192322	200127	200127A	DEN	ZDV
UAL1775	19 2254	192330	-	-	-	ROC	ZOB
N731DL	19 2229	200225	200206	200235	-	PWK	ZAU
GLA667	19 2139	200229	200010	200110	200110A	ALO	ZAU
ACA7031	19 2124	200120	-	-	-	CYYZ	CZY
GLA63	19 2124	200001	-	-	-	IMT	ZMP
UAL8804	19 2114	200146	-	-	-	IAD	ZDC
N192SA	19 2059	192215	192036	192142	192142A	EKM	ZAU
AAL1563	19 2054	192233	-	-	-	ROC	ZOB
EGF14	19 2054	192052	-	-	-	DLH	ZMP
AMT7105	19 2039	200301	200111	200311	200311Z	NGU	ZDC
UAL384	19 2034	200105	-	-	-	SAN	ZLA
UAL9860	19 2024	200146	-	-	-	IAD	ZDC
EGF752	19 1949	192044	192018	192149	192149A	CMH	ZID
CXP213	19 1939	192252	192329	200002	200002B	SBN	ZAU
LXJ306	19 1934	200205	200227	200353	200353A	MSP	ZMP
AWI33	19 1924	192304	192318	200026	200026A	GRB	ZMP
UAL9151	19 1904	200242	200303	200338	200338B	ORD	ZAU
N604MU	19 1904	200101	200356	200547	200547A	DAL	ZFW
N800FL	19 1904	200003	200301	200408	200408D	AMW	ZMP
N899SD	19 1854	192124	192045	192140	192140A	PIA	ZAU
N192SA	19 1831	192110	192036	192142	192142A	EKM	ZAU
MEX810	19 1831	192102	192010	192132	-	CVG	ZID
AMT8078	19 1829	200140	200001	200259	200259A	LAS	ZLA
UAL582	19 1824	191940	192009	192118	192118A	IND	ZID
AAL460	19 1819	191949	191908	191956	191956A	IND	ZID
AAL472	19 1819	191909	192018	192123	192123D	IND	ZID
AAL532	19 1804	191940	191950	192019	192019B	IND	ZID
UAL1948	19 1804	191920	191923	192003	192003D	IND	ZID
N25W	19 1759	192225	192219	200016	200016A	RIC	ZDC
N104CT	19 1754	192158	200444	200547	200547A	DSM	ZMP
UAL8136	19 1744	192316	200338	200707	200707B	SEA	ZSE
MAX808	19 1744	192002	200256	200405	200405B	STL	ZKC
AAL1046	19 1744	191908	191836	191908	191908B	IND	ZID
AAL460	19 1737	191925	191901	191925	-	IND	ZID
AAL486	19 1737	191909	191908	191936	191936A	IND	ZID
UAL1138	19 1737	191845	191833	191913	191913B	IND	ZID
MXA808	19 1726	191819	191820	191909	191909A	STL	ZKC
CSN391	19 1720	200129	192018	200132	200132A	ANC	ZAN
AMT6018	19 1720	192105	191610	192123	192123A	MYNN	ZSA
N811LC	19 1708	191936	200315	200403	200403C	PIA	ZAU
UAL8106	19 1703	200145	192322	200127	200127A	DEN	ZDV

EJA336	19 1657	192106	200338	200409	200409B	MDW	ZAU
N899SD	19 1645	192043	192045	192140	192140A	DEC	ZAU
N897MC	19 1613	192002	191828	191859	191859B	MTW	ZMP
TRZ5216	19 1603	192255	191955	192329	192329A	MKJS	ZSA
N897MC	19 1603	192002	191931	192012	-	MTW	ZMP
N41BP	19 1603	191939	200242	200404	200404B	SUX	ZMP
RYN1106	19 1553	192235	191821	192300	192300B	MDPC	ZSA
N23404	19 1543	191907	191912	192008	192008C	DEC	ZAU
AWI35	19 1537	191849	191914	192022	192022B	GRB	ZMP
JUD530	19 1533	191941	191944	192043	192043C	YIP	ZOB
N994CT	19 1533	191811	191832	191913	191913A	PIA	ZAU
NAO41	19 1523	192234	192213	200038	200038A	JFK	ZNY
RYN2356	19 1517	191954	191725	192126	192126A	MMPR	ZSA
N3026H	19 1513	191738	191653	191739	191739A	DEC	ZAU
AMT8028	19 1503	192043	191800	192202	192202A	MMUN	ZSA
N5114	19 1503	192022	192013	192151	192151B	PDK	ZTL
N24G	19 1503	191653	200258	200400	200400B	CAK	ZOB
UAL8887	19 1443	192117	200114	200447	200447A	SEA	ZSE
UAL240	19 1443	191644	191631	191755	191755A	STL	ZKC
UAL748	19 1443	191615	191642	191659	191533C	IND	ZID
N740E	19 1413	191619	200023	200140	200140B	CGF	ZOB
N850SM	19 1408	191653	191508	191658	191658C	CLT	ZTL
N200LH	19 1403	191740	191951	192112	192112A	MSP	ZMP
N850SM	19 1403	191653	191508	191717	-	CLT	ZTL
RYN3324	19 1358	191855	191605	191928	191928E	MMUN	ZSA
NHAWK34	19 1353	191655	200153	200402	200402B	CMH	ZID
N28GP	19 1337	191603	191454	191623	191623C	FTY	ZTL